



State of Utah

GARY R. HERBERT  
Governor

GREG BELL  
Lieutenant Governor

Department of  
Environmental Quality

Amanda Smith  
Executive Director

DIVISION OF WATER QUALITY  
Walter L. Baker, P.E.  
Director

**Water Quality Board**  
Paula Doughty, *Chair*  
Steven P. Simpson, *Vice Chair*  
Myron E. Bateman  
Clyde L. Bunker  
Merritt K. Frey  
Darrell H. Mensel  
Leland J. Myers  
Neal L. Peacock  
Gregory L. Rowley  
Amanda Smith  
Daniel C. Snarr  
Jeffery L. Tucker  
Walter L. Baker  
*Executive Secretary*

**Utah Water Quality Board Meeting**  
DEQ Building Board Room #1015  
195 North 1950 West  
Salt Lake City, Utah 84116  
**February 22, 2012**

**Work Meeting Begins @ 8:30 a.m.**

Wastewater Process Engineering 101 ..... Paul Krauth

**Board Meeting Begins @ 9:30 a.m.**  
**AGENDA**

- A. **Water Quality Board Meeting – Roll Call**
- B. (Tab 1) **Minutes:**
  - 1. Approval of Minutes for January 25, 2012 ..... Paula Doughty
- C. **Executive Secretary's Report** ..... Walt Baker
- D. (Tab 2) **Presentation:**
  - 1. Presentation of the Great Salt Lake Study on Assessing "Lake Health" ..... Leland Myers
  - 2. Presentation of the Economic Significance Study on Great Salt Lake ..... Don Leonard
- E. (Tab 3) **Rulemaking:**
  - 1. Request to initiate Rulemaking Utah Sewer Management Program Rule R317-801 ..... John Kennington
- F. (Tab 4) **Funding Requests:**
  - 1. Financial Status Report ..... Emily Cantón
  - 2. Green River Introduction ..... John Cook
- G. (Tab 5) **Other Business:**

**Next Meeting – March 28, 2012**  
**DEQ Building Board Room #1015**  
**195 North 1950 West**  
**Salt Lake City, Utah 84116**

In compliance with the American Disabilities Act, individuals with special needs (including auxiliary communicative aids and services) should contact Brooke Baker, Office of Human Resources, at (801) 536-4412, TDD (801) 536-4414, at least five working days prior to the scheduled meeting.



**1**

**APPROVAL OF MINUTES**

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**PRESENTATION**

**3**

**RULEMAKING**

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**FUNDING REQUESTS**

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**OTHER BUSINESS**

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### **MINUTES**

#### **UTAH DEPARTMENT OF ENVIRONMENTAL QUALITY**

#### **UTAH WATER QUALITY BOARD**

DEQ Building Board Room #1015

195 North 1950 West

Salt Lake City, Utah 84116

Wednesday, January 25, 2012

#### **UTAH WATER QUALITY BOARD MEMBERS PRESENT**

Amanda Smith	Clyde Bunker	Myron Bateman
Leland Myers	Jeffery Tucker	Darrell Mensel
Greg Rowley	Paula Doughty	Neal Peacock
Steven Simpson	Dan Snarr	

Absent: Merritt Frey

#### **DIVISION OF WATER QUALITY STAFF MEMBERS PRESENT**

Walt Baker, Faye Bell, John Whitehead, Ed Macauley, Leah Ann Lamb, Jeff Ostermiller, Judy Etherington, Chris Bittner, Emily Canton, Carl Adams, Lisa Nelson, Ben Holcomb, Dave Wham, Kim Shelley, Kari Lundeen, Pascoline Loricourt (temp),

#### **OTHERS PRESENT**

<u>Name</u>	<u>Organization Representing</u>
Jim Olson	HDR Engineering
Eric Johnson	Bond Counsel
Cindy Gooch	JUB Engineering
Dennis Gunn	Coalville City
Rob Dubuc	FOGSL
Trevor Lindley	JUB Engineering
Duane Schmidt	Mayor of Coalville City
David Krueger	Bureau of Reclamation
Paul McConkie	Attorney General Office
Doug Nielsen	Sunrise Engineering
Bob Allen	Mountainland Assoc of Gov
Karen Nicholes	HDR
Andrew Jarvson	MAG
Rick Cox	URS

Chair Doughty called the Board meeting to order at 9:05 a.m. and invited the members of the audience to introduce themselves.

**APPROVAL OF MINUTES OF THE DECEMBER 5, 2011 MEETING**

Mr. Meyers noted in the Executive Secretary's Report that wording needed to be corrected. The sentence, "Water Quality does not need adjudication", should be deleted. The word "permits" should be inserted between "and" and "will" in the middle of the summary of the Executive Secretary's Report

**Motion:**           **It was moved by Mr. Meyers and seconded by Mayor Peacock to approve the minutes of the December 5, 2011 with the noted corrections. The motion was unanimously approved.**

**Executive Secretary's Report:** Mr. Baker told the Board that the Boards S.B. 21 bill is still evolving. We expect there will be a change to the makeup of all DEQ Boards, including reducing the number of Board members. Ms. Smith stated SB21 is specific in establishing boards with 9 members and detailing what the qualifications are to serve on a board.

**Operator Certification Council Appointments:** Ms. Etherington explained that the terms of service for two members of the Wastewater Operator Certification Council have expired. Those with expired terms are Terral Dunn, representing wastewater operators and Paul Fulgham, representing collection system operators. Recommendations to fill these two positions were solicited from water associations throughout the state. Upon consideration of the recommendations submitted by those entities, staff recommends that Clifton Specht be appointed to fill the vacancy "representing wastewater collection operators," and Terral Dunn be reappointed to fill the position representing "wastewater operators." The terms would begin February 1, 2012 and continue through January 31, 2015.

**Motion:**           **It was moved by Mr. Myers to approve staff's recommendations for the Wastewater Operator Certification Council. The motion was seconded by Mr. Bunker and was unanimously approved. Paula Doughty thanked the Certification Council for their service to the Board and state.**

**FUNDING REQUEST**

**Financial Assistance Status Report** – Ms. Cantón updated the Board on the "Summary of Assistance Program Funds," as outlined on page 3.1.

**Coalville City Request for Authorization** – Ms. Nelson introduced Mayor Duane Schmidt and Dennis Gunn with Coalville City and Trevor Lindley with JUB Engineering. On April 6, 2011 the Water Quality Board (the Board) authorized Coalville City partial financing for a new wastewater treatment facility to replace its existing aged plant located on U.S. Bureau of Reclamation (USBR) land subject to a non-renewable lease expiring October 2014. The estimated cost of the project was \$9,484,000. The Board previously authorized one-half of the replacement cost in the amount of a \$3,092,000 grant and a \$1,650,000 loan, with the expectation that Coalville City would pursue the balance of the funding through USDA Rural Development. Coalville actively pursued funding from USDA, and is now the number three priority in Utah for USDA funding. However, USDA's funding for 2012 is insufficient to fund either the number two priority project or Coalville, and will likely remain insufficient throughout 2013 as well. Also, newly discovered project challenges including a requirement by SHPO to have an archaeologist onsite during construction excavation activities has increased the project cost by \$40,000. Coalville City is requesting total project funding in the form of a \$6,299,000 construction grant and a \$3,225,000 loan repayable over 20 years at an interest rate of 0.0%, and a design advance in the amount of \$1,062,000 in order to proceed to design immediately to meet its October 2014 lease expiration.

**Motion:** It was moved by Mr. Simpson to approve Coalville City construction funding in the form of a \$6,299,000 construction grant and a \$3,225,000 loan repayable over 20 years at an interest rate of 0.0%, and a design advance in the amount of \$1,062,000 subject to special conditions in staff's January 25, 2012 memo to the Water Quality Board. The motion was seconded by Mayor Peacock and was approved 7-3 with Mr. Tucker, Mr. Mansel and Mr. Bateman opposing.

#### **RULEMAKING:**

**Adoption of Rule Changes R317-2 *Standards of Quality for Waters of the State* Subsequent to Triennial Review:** Mr. Bittner gave the Board an overview of the comments received during the public comment period. These comments were addressed by making minor revisions to the proposed rule. Staff recommends that the Board adopt the proposed rules with the changes.

**Motion:** It was moved by Mr. Myers to adopt the proposed changes to Rule R317-2 *Standards of Quality for Waters of the State*. The motion was seconded by Mr. Bateman and was unanimously approved.

**Request to Adopt Rule Changes to R317-8-9 *Pesticide Rule*:** Mr. Kennington explained to the Board the comments received on the proposed rule. At the time of the October meeting the rule was in its public notice period and was to expire on October 31, 2011. At that time the Board made the motion to adopt the rule if no adverse comments were received. On October 31, 2011 DEQ received a letter from the Utah Water Users Association (UWUA) requesting an extension of the public notice period, citing inadequate notice of the public notice period. In response, the DWQ extended the public comment period to Dec. 31, 2011 and notified UWUA. Following the extension of the comment period DWQ received two comments, one from UWUA and one from Utah Department of Natural Resources (DNR). Having addressed the comments staff proposes that the rule should proceed as proposed.

**Motion:** It was moved by Mr. Bateman to adopt the proposed changes to Rule R317-8 -9 *Pesticide Rule*. The motion was seconded by Mr. Simpson and was approved with Mr. Bunker opposing.

#### **OTHER BUSINESS:**

**Discussion of 2012 work meeting topics:** Mr. Baker reviewed the topics of interest for the upcoming 2012 work meetings. The Board voted in order of preference the following:

Nutrient criteria and related policy issues – 9 votes  
Funding and budget issues – 9 votes  
Wastewater process engineering 101 – 7 votes  
TMDL implementation/enforcement issues – 6 votes  
Water quantity vs. quality policy issues – 4 votes  
Great Salt Lake issues – 4 votes  
Non-point source issues – 2 votes  
Standards and assessment issues – 0 votes  
Permitting issues – 0 votes  
Legislative activities – On-going

**Refinement of Utah Beneficial Aquatic Life Uses:** As an informational item, Mr. Holcomb and Mr. Ostermiller explained to the Board that the past few years there have been questions and concerns raised by stakeholders on whether DWQ's water quality standards are appropriately protective, particularly with regard to development of nutrient criteria and TMDL implementation. DWQ has subsequently convened a group of stakeholders under the Water Quality Standards Workgroup, to discuss how Utah's standards might be revised to better achieve water quality goals. One possible solution which has been successfully implemented by several States is the development of "tiered" aquatic life uses. Staff then gave the Board an overview of what this proposal entails.

**-Next Meeting -  
February 22, 2012  
DEQ Building Board Room #1015  
195 North 1950 West  
Salt Lake City, Utah 84116**

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Paula Doughty, Chairperson  
Utah Water Quality Board





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### MEMORANDUM

TO: Utah Water Quality Board

THROUGH: Walter Baker, Executive Secretary  
John Whitehead, Assistant Director 

FROM: John Kennington 

DATE: February 8, 2012

SUBJECT: Request for rulemaking: Utah Sewer Management Program, Rule R317-801

#### **Purpose of Action Item**

The purpose of this action item is to request permission to proceed with rulemaking for the attached draft rule R317-801, "Utah Sewer Management Program" that is proposed to regulate all public wastewater collection systems in the State of Utah. The rule language is included in the Board packet.

#### **Background**

In the last two years the rule was developed in a cooperative effort between the regulated community and the Division. The rule has been subjected to several rounds of review by the regulated community, Division staff and management, and the Utah Attorney General.

It was first introduced to the Board at its June 2010 meeting. Last year it went through one round of rulemaking, which resulted in some constructive comment based on some regulated community concerns. Changes were made to the rule to clarify the limits of liability for permitted systems from problems which may occur outside their jurisdictions, from private laterals and unpermitted private collection systems. A template Sewer Management Plan was also developed to serve as a guide to reduce the burden on those collection entities who may develop their own Sewer Management Plan, as required by the rule.

The rule sets out a sewer collection system management program that contains requirements for the reporting of sanitary sewer overflows, and for essential components of a program to plan, maintain and operate sewer collection systems.

3.1

The Division requests Board authorization to initiate formal rulemaking for R317-801. This program will be implemented utilizing existing resources in the UPDES Engineering Section, estimated to initially require 0.5 FTE for the first six months and 0.25 FTE thereafter. The program should be fully implemented by October 1, 2012.

If you have any questions about the rule please contact John Kennington (801-536-4380) at the Division of Water Quality.

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**DRAFT**

**Rule R317-801. Utah Sewer Management Program (USMP).**

**R317-801-1. Applicability and Definitions.**

1.1 APPLICABILITY. Any federal or state agency, municipality, county, district, and other political subdivision of the state that owns or operates a sewer collection system is required to comply with this rule, R317-801.

1.2 DEFINITIONS. The following definitions are to be used in conjunction with those in R317-1-1 and R317-8-1. The following terms have the meaning as set forth unless a different meaning clearly appears from the context or unless a different meaning is stated in a definition applicable to only a portion of these rules:

- (1) "BMP" means "best management practice".
- (2) "CCTV" means "closed circuit television".
- (3) "CIP" means a "Capital Improvement Plan".
- (4) "DWQ" means "the Utah Division of Water Quality".
- (5) "FOG" means "fats, oils and grease".
- (6) "I/I" means "infiltration and inflow".
- (7) "Permittee" means the federal and state agency, municipality, county, district, and other political subdivision of the state that owns or operates a sewer collection system or who is in direct responsible charge for operation and maintenance of the sewer collection system. When two separate federal and state agency, municipality, county, district, and other political subdivision of the state are interconnected, each shall be considered a separate Permittee.
- (8) "SECAP" means "System Evaluation and Capacity Assurance Plan".
- (9) "Sewer Collection System" means a system for the collection and conveyance of wastewaters or sewage from domestic, industrial and commercial sources. The Sewer Collection System does not include sewer laterals under the ownership and control of an owner of real property, private sewer systems owned and operated by an owner of real property, and systems that collect and convey stormwater exclusively.
- (10) "SORP" means "Sewer Overflow Response Plan"
- (11) "SSMP" means "Sewer System Management Plan".
- (12) "SSO" means "sanitary sewer overflow", the escape of wastewater or pollutants from, or beyond the intended or designed containment of a sewer collection system.

(13) "Class 1 SSO" (Significant SSO) means a SSO or backup that is not caused by a private lateral obstruction or problem that:

- (a) effects more than five private structures;
- (b) affects one or more public, commercial or industrial structure(s);
- (c) may result in a public health risk to the general public;
- (d) has a spill volume that exceeds 5,000 gallons, excluding those in single private structures; or
- (e) discharges to Waters of the state.

(14) "Class 2 SSO" (Non Significant SSO) means a SSO or backup that is not caused by a private lateral obstruction or problem that does not meet the Class 1 SSO criteria.

(15) "USMP" means the "Utah Sewer Management Program".

#### **R317-801-2. General Permit Requirements.**

2.1 GENERAL PERMIT FOR SEWER COLLECTION SYSTEM. All permittees are required to operate under the General Permit for sewer collection systems as required by this rule, R317-801.

##### **2.2 NOTICE OF INTENT REQUIREMENTS.**

(1) A permittee shall submit a Notice of Intent to be covered by the General Permit for sewer collection systems between (TWO DATES). *(Note: the dates inserted would be for a range of between four and six (6) months after the effective date of this rule).* A new permittee for a sewer collection system shall submit a Notice of Intent to be covered by the General Permit for sewer collection systems at least three (3) months prior to operation of the system.

(2) Forms and instructions for submitting a Notice of Intent can be obtained online on the DWQ's website.

##### **2.3 EFFECTIVE DATE OF GENERAL PERMIT.**

General permit coverage will be in effect when the Notice of Intent has been submitted, approved and declared complete by the Executive Secretary.

#### **R317-801-3. General Permit Provisions.**

##### **3.1 PROHIBITIONS.**

(1) Any SSO that results in a discharge of untreated or partially treated wastewater to Waters of the state is prohibited.

(2) Any SSO that results in a discharge of untreated or partially treated wastewater that creates a health

hazard, nuisance, or is a threat to the environment is prohibited.

### 3.2 GENERAL SSO REQUIREMENTS.

1) The permittee shall take all feasible steps to eliminate SSOs to include:

(a) properly managing, operating, and maintaining all parts of the sewer collection system;

(b) training system operators;

(c) allocating adequate resources for the operation, maintenance, and repair of its sewer collection system, by establishing a proper rate structure, accounting mechanisms, and auditing procedures to ensure an adequate measure of revenues and expenditures in accordance with generally acceptable accounting practices; and,

(d) providing adequate capacity to convey base flows and peak flows, including flows related to normal wet weather events. Capacity shall meet or exceed the design criteria of R317-3.

(2) SSOs shall be reported in accordance with the requirements of R317-801-4.

(3) When an SSO occurs, the permittee shall take all feasible steps to:

(a) control, contain, or limit the volume of untreated or partially treated wastewater discharged;

(b) terminate the discharge;

(c) recover as much of the wastewater discharged as possible for proper disposal, including any wash down water; and,

(d) mitigate the impacts of the SSO.

### **R317-801-4. General Permit SSO Reporting Requirements.**

4.1 SSO REPORTING. SSOs shall be reported as follows:

(1) A Class 1 SSO shall be reported orally within 24 hrs and with a written report submitted to the DWQ within five calendar days. Class 1 SSO's shall be included in the annual USMP report.

(2) Class 2 SSOs shall be reported on an annual basis in the USMP annual report.

4.2 ANNUAL REPORT. A permittee shall submit to DWQ a USMP annual operating report covering information for the previous calendar year by April 15 of the following year.

### **R317-801-5. SSMP Requirements.**

5.1 SSMP. The permittee shall have and implement a written SSMP and shall make it available to DWQ upon request. A copy of the SSMP shall be publicly available at

the permittee's office and/or available on the Internet. The SSMP must be publicly noticed by the permittee and approved by the permittee's governing body at a public meeting. The main purpose of the SSMP is to provide a plan and schedule to properly manage, operate, and maintain all parts of the sewer collection system to reduce and prevent SSOs, as well as minimize impacts of any SSOs that occur.

5.2 CONTENTS OF SSMP. The SSMP shall include:

(1) Organization information to include:

(a) The name or position of the responsible or authorized representative;

(b) The names and telephone numbers for management, administrative, and maintenance positions responsible for implementing specific measures in the SSMP. The SSMP must identify lines of authority through an organization chart or similar document with a narrative explanation; and,

(c) The chain of communication for reporting SSOs, from receipt of a complaint or other information, including the person responsible for reporting SSOs to DWQ, the public (if needed) and other agencies if applicable (such as County Health Department).

(2) Sewer collection system use ordinances, service agreements, or other legally binding methods, that:

(a) Prohibit unauthorized discharges into its sewer collection system i.e. I/I, stormwater, chemical dumping, unauthorized debris and cut roots;

(b) Require that sewers and connections be properly designed and constructed;

(c) Ensure access for maintenance, inspection, or repairs for portions of the laterals owned or maintained by the permittee;

(d) Limit the discharge of FOG and other debris that may cause blockages;

(e) Require compliance with pretreatment requirements;

(f) Provide authority to inspect industrial users; and,

(g) Provide for enforcement for violations of the requirements.

(3) An Operations and Maintenance Plan which includes:

(a) An up-to-date map of the sewer collection system, showing all gravity line segments, manholes, pumping facilities, pressure pipes, gates and all other applicable conveyance facilities;

(b) A description of routine preventative operation and maintenance activities by staff and contractors,

including a system for scheduling regular maintenance and cleaning of the sewer collection system with more frequent cleaning and maintenance targeted at known problem areas. The plan should include regular visual and TV inspection of manholes and sewer pipes and a system of ranking the condition of sewer pipe and manholes. The plan should have an appropriate system to document scheduled and all other types of work activities, such as a maintenance, management, system, or paper work orders;

(c) A Rehabilitation, Replacement and Improvement Plan to identify and prioritize system deficiencies and implement short-term and long-term rehabilitation actions to address each class of deficiencies. Rehabilitation and replacement should focus on sewer pipes that are at risk of failure or prone to more frequent blockages due to pipe defects. The rehabilitation and replacement plan shall include a CIP, if required, that addresses proper management and protection of the infrastructure assets;

(d) Schedule for training on a regular basis for staff and contractors in operations and maintenance consistent with DWQ continuing education requirements for certified operators; and,

(e) Providing for equipment and replacement part inventories, including identification of critical replacement parts. (This may include a list of vendors that the equipment and/or part can be purchased from, or local agreements).

(4) Design and performance provisions which include:

(a) Design, construction standards and specifications that meet or exceed R-317-3 for the installation of new sewer collection systems, pump stations and other appurtenances and for the rehabilitation and repair of existing sewer collection systems; and,

(b) Procedures and standards for inspecting, testing and documenting the installation of new sewers, pumps, and other appurtenances and for rehabilitation and repair projects.

(5) A SORP which has the following measures to protect public health and the environment:

(a) A program to respond to overflows which addresses:

1. Receipt and documentation of information regarding a sewer overflow;

2. Dispatch of appropriate crews to the site of the sewer overflow;

3. Overflow correction, containment, and cleanup including procedures to ensure that all reasonable steps

are taken to contain and prevent the discharge of untreated and partially treated wastewater to Waters of the state and to minimize or correct any adverse impact on the environment resulting from the sewer overflow;

4. Preparation of an overflow report by responding personnel; and,

5. Follow up with affected persons,

(b) Procedures for prompt notification to the public.

(c) Procedures to notify appropriate regulatory agencies and other potentially affected entities to include:

1. DWQ to comply with SSO reporting requirements;

2. County Health Department, local water supply agencies as appropriate, and other affected agencies should the SSO potentially affect the public health or reach the Waters of the state;

3. Utah Division of Emergency Response and Remediation, if hazardous materials are or may be involved; and,

4. Any other required UPDES, State, or Federal reporting requirements.

(d) Procedures to ensure that appropriate staff personnel are aware of and follow the SORP and are appropriately trained.

(6) For permittees with 2000 or more connections, and at the option of permittees with less than 2000 connections, a FOG control plan consistent with the potential for FOG discharge from commercial and industrial dischargers. Where required, the FOG control plan shall include some or all of the following:

(a) An implementation plan and schedule for a residential and commercial public education outreach for the FOG control plan that promotes proper disposal of FOG;

(b) A plan for the disposal of FOG generated within the permittee's service area. This may include a list of acceptable disposal facilities and/or additional facilities needed to adequately dispose of FOG;

(c) Sewer collection system use ordinances, service agreements, or other legally binding methods, that prohibit FOG discharges to the system;

(d) Requirements to install grease removal devices (such as traps or interceptors), design standards for the removal devices, maintenance requirements, BMP requirements, record keeping and reporting requirements;

(e) A FOG inspection, monitoring and evaluation plan;

(f) Identification of resources to do inspections and enforce the FOG control plan; and,



(g) A maintenance schedule for lines affected by FOG blockages.

(7) For permittees with 2000 or more connections, and at the option of permittees with less than 2000 connections, a SECAP. Where required, the SECAP shall include the following:

(a) an evaluation of the wastewater collection system's existing hydraulic capacity using historical information such as flow, system records, current zoning, local development options, and maintenance records;

(b) identification of system deficiencies; and,

(c) a CIP that includes an appropriate model for the system that can be used to evaluate the hydraulic conditions in the system and identify existing and forecast future deficiencies to provide hydraulic capacity such as for future dry weather peak flow conditions, as well as the appropriate design for storm or wet weather events. The CIP shall establish a short and long term schedule to address the deficiencies and conditions identified, including a priority list, alternative analysis, and schedule for recommended upgrades. The CIP shall include increases in pipe size, I/I reduction plans, increases in pumping capacities and/or redundancies, storage capacity increases and recommended trunk line cleaning schedules or other monitoring activities. The CIP shall identify the sources of funding. The schedule shall be reviewed and adjusted yearly.

### 5.3 MONITORING, MEASUREMENT, AND SSMP MODIFICATIONS.

(1) The permittee shall maintain relevant information that can be used to establish and prioritize appropriate SSO prevention activities and shall document all monitoring activities (i.e. daily cleaning activities, CCTV video records, manhole inspections, and hot spot activities).

(2) The permittee shall regularly review the effectiveness of each element of the SSMP and shall monitor the SECAP implementation (when required).

(3) The permittee shall annually assess the success of the operation and maintenance plan (i.e. line cleaning, CCTV inspections and manhole inspections, and SSO events) and adjust the operation and maintenance plan as needed based on system performance.

(4) The permittee shall update SSMP elements, as appropriate, based on monitoring or performance evaluations.

(5) The permittee shall regularly identify and illustrate SSO trends, including frequency, location, and volume.

(6) The permittee shall conduct periodic internal audits, appropriate to the size of the system and the number of SSOs. At a minimum, these audits must occur every five years and a report must be prepared and kept on file. This audit shall focus on evaluating the effectiveness of the SSMP and the permittee's compliance with the SSMP, including identification of any deficiencies in the SSMP and steps to correct them.

(7) The permittee is encouraged to communicate with the public, as needed, on the development, implementation, and performance of the SSMP. The permittee may establish a public outreach/communication plan which shall provide the public with the opportunity to provide input to the permittee as the SSMP is developed and implemented.

(8) The SSMP shall be prepared by, or under the direction of, a Utah certified professional engineer or another qualified professional.

(9) The SSMP must be completed by the deadlines listed in the Timeframe for Implementation in R317-801-6.

R317-801-6. Certification, Submission and Implementation Requirements.

6.1 TIMELINE FOR NOTICE, SSMP, AND CERTIFICATION. The permittee shall certify to DWQ that a SSMP is in place that is in compliance with the USMP by submitting a notice to DWQ within the time frames identified in the following time schedule:

Table 1. Timeframe for Implementation.

Task	Completion Dates by Population			
	>50,000 population	15,001 to 50,000 population	3,501 to 15,000 population	3,500 and Less population
Notice of Intent to be covered by General Permit	4 - 6 Months after effective date of rule			
Completion of SSMP	24 months after	30 months after	36 months after	42 months after

(excluding SECAP)	effective date	effective date	effective date	effective date
Completion of SECAP when required	36 months after effective date	42 months after effective date	48 months after effective date	60 months after effective date

6.2 SIGNIFICANT MODIFICATIONS. Significant modification of the SSMP must be public noticed by the permittee and approved by the permittee's governing body at a public meeting. A new notice certifying the revised SSMP is in place shall be sent to DWQ.

6.4 INCOMPLETE REPORTS. If a permittee becomes aware that it failed to submit required information in any notice or report, the permittee shall promptly amend the notice or report.

6.5 CERTIFICATION OF NOTICES AND REPORTS. All notices and reports submitted to DWQ shall be signed and certified as required in R317-8-3.4.



# **Loan Funds Financial Projections**

	3rd Qtr FY 2012	4th Qtr FY 2012	1st Qtr FY 2013	2nd Qtr FY 2013	3rd Qtr FY 2013	4th Qtr FY 2013
<b>STATE REVOLVING LOAN FUND (SRF)</b>	Jan - Mar 2012	Apr - June 2012	July - Sept 2012	Oct - Dec 2012	Jan - Mar 2013	Apr - June 2013
<b>Funds Available</b>						
SRF - 1st Round (LOC) 2011 Cap Grant	\$ 278,997	\$ -	\$ -	\$ -	\$ -	\$ -
SRF - 1st Round (LOC) 2012 Cap Grant	\$ -	\$ 7,000,000	\$ -	\$ -	\$ -	\$ -
State Match	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
SRF - 2nd Round	\$ 39,366,615	\$ 17,983,777	\$ 28,942,169	\$ 30,984,649	\$ 32,495,516	\$ 34,908,618
Interest Earnings at 0.6%	\$ 60,723	\$ 27,740	\$ 44,643	\$ 47,794	\$ 50,124	\$ 53,847
Loan Repayments	\$ 104,842	\$ 3,930,653	\$ 1,997,837	\$ 1,463,073	\$ 5,587,978	\$ 3,039,588
<b>Total Funds Available</b>	<b>\$ 39,811,177</b>	<b>\$ 28,942,169</b>	<b>\$ 30,984,649</b>	<b>\$ 32,495,516</b>	<b>\$ 38,133,618</b>	<b>\$ 38,002,052</b>
<b>Project Obligations</b>						
Elwood Town - Principle Forgiveness	\$ (1,381,400)	\$ -	\$ -	\$ -	\$ -	\$ -
Granger-Hunter Improvement District	\$ (5,452,000)	\$ -	\$ -	\$ -	\$ -	\$ -
Kearns Improvement District 2011	\$ (6,555,000)	\$ -	\$ -	\$ -	\$ -	\$ -
Mona - Principle Forgiveness	\$ (700,000)	\$ -	\$ -	\$ -	\$ -	\$ -
South Valley WRF - NonPoint Source	\$ (805,000)	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Loan Authorizations</b>						
Coalville	\$ -	\$ -	\$ -	\$ -	\$ (3,225,000)	\$ -
Santaquin City	\$ (6,934,000)	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Projects in Planning</b>						
Long Valley Town	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Total Obligations</b>	<b>\$ (21,827,400)</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ (3,225,000)</b>	<b>\$ -</b>
<b>SRF Unobligated Funds</b>	<b>\$ 17,983,777</b>	<b>\$ 28,942,169</b>	<b>\$ 30,984,649</b>	<b>\$ 32,495,516</b>	<b>\$ 34,908,618</b>	<b>\$ 38,002,052</b>

## **UTAH WASTEWATER LOAN FUND (UWLF)**

<b>Funds Available</b>						
UWLF	\$ 6,167,703	\$ 1,530,177	\$ 1,934,227	\$ 2,911,052	\$ 3,740,977	\$ 5,307,982
Sales Tax Revenue	\$ 381,424	\$ -	\$ 896,875	\$ 896,875	\$ 896,875	\$ 896,875
Loan Repayments	\$ 25,000	\$ 731,000	\$ 406,900	\$ 260,000	\$ 997,080	\$ 796,393
<b>Total Funds Available</b>	<b>\$ 6,574,127</b>	<b>\$ 2,261,177</b>	<b>\$ 3,238,002</b>	<b>\$ 4,067,927</b>	<b>\$ 5,634,932</b>	<b>\$ 7,001,251</b>
<b>General Obligations</b>						
State Match Transfer	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
DWQ Administrative Expenses (TMDL, etc.)	\$ (326,950)	\$ (326,950)	\$ (326,950)	\$ (326,950)	\$ (326,950)	\$ (326,950)
<b>Project Obligations</b>						
None at this time	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Loan Authorizations</b>						
Ephraim City	\$ (2,091,000)	\$ -	\$ -	\$ -	\$ -	\$ -
Murray City	\$ (2,626,000)	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Projects in Planning</b>						
None at this time	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Total Obligations</b>	<b>\$ (5,043,950)</b>	<b>\$ (326,950)</b>	<b>\$ (326,950)</b>	<b>\$ (326,950)</b>	<b>\$ (326,950)</b>	<b>\$ (326,950)</b>
<b>UWLF Unobligated Funds</b>	<b>\$ 1,530,177</b>	<b>\$ 1,934,227</b>	<b>\$ 2,911,052</b>	<b>\$ 3,740,977</b>	<b>\$ 5,307,982</b>	<b>\$ 6,674,301</b>

4.1

# **Hardship Grant Funds Financial Projections**

	3rd Qtr FY 2012	4th Qtr FY 2012	1st Qtr FY 2013	2nd Qtr FY 2013	3rd Qtr FY 2013	4th Qtr FY 2013
<b>HARDSHIP GRANT FUNDS (HGF)</b>	Jan - Mar 2012	Apr - June 2012	July - Sept 2012	Oct - Dec 2012	Jan - Mar 2013	Apr - June 2013
<b>Funds Available</b>						
Beginning Balance	\$ 12,404,715	\$ 4,164,023	\$ 4,358,583	\$ 3,950,493	\$ 3,964,922	\$ (1,225,978)
Interest Earnings at 0.6%	\$ 19,134	\$ 6,423	\$ 6,723	\$ 6,094	\$ 6,116	\$ -
UWLP Interest Earnings at 0.6%	\$ 9,514	\$ 2,360	\$ 2,984	\$ 4,490	\$ 5,770	\$ 8,188
Hardship Grant Assessments	\$ -	\$ 980,924	\$ 504,251	\$ -	\$ 548,910	\$ 1,052,481
Interest Payments	\$ 12,000	\$ 266,852	\$ 77,952	\$ 3,845	\$ 165,304	\$ 269,934
Hardship Advance Repayments	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Total Funds Available</b>	<b>\$ 12,445,363</b>	<b>\$ 5,420,583</b>	<b>\$ 4,950,493</b>	<b>\$ 3,964,922</b>	<b>\$ 4,691,022</b>	<b>\$ 104,625</b>
<b>Project Obligations</b>						
Big Water (cost share CIB) - Construction Grant	\$ (1,166,000)	\$ -	\$ -	\$ -	\$ -	\$ -
Blanding City - Planning Adv.	\$ (39,900)	\$ -	\$ -	\$ -	\$ -	\$ -
Coalville - Planning Adv.	\$ (25,000)	\$ -	\$ -	\$ -	\$ -	\$ -
Coalville - Construction Grant	\$ -	\$ (1,062,000)	\$ -	\$ -	\$ (5,237,000)	\$ -
Duchesne County - Hancock Cove	\$ (22,000)	\$ -	\$ -	\$ -	\$ -	\$ -
Elwood Town - Construction Grant	\$ (750,600)	\$ -	\$ -	\$ -	\$ -	\$ -
Green River - Planning Adv.	\$ (23,000)	\$ -	\$ -	\$ -	\$ -	\$ -
*Green River - Construction Grant	\$ -	\$ -	\$ -	\$ -	\$ (680,000)	\$ -
Heber Valley - Planning Adv.	\$ (68,000)	\$ -	\$ -	\$ -	\$ -	\$ -
Long Valley - Planning Advance	\$ (27,000)	\$ -	\$ -	\$ -	\$ -	\$ -
Mona City - Construction Grant	\$ (400,000)	\$ -	\$ -	\$ -	\$ -	\$ -
Perry/Willard WWTP - Construction Grant	\$ (373,000)	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Projects in Planning</b>						
None at this time	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Non-Point Source Obligations</b>						
DEQ - Economic Study of Nutrient Removal	\$ (313,586)	\$ -	\$ -	\$ -	\$ -	\$ -
DEQ - Nutrient Reduction Benefit Study	\$ (75,115)	\$ -	\$ -	\$ -	\$ -	\$ -
DEQ - Willard Spur Study	\$ (1,287,774)	\$ -	\$ -	\$ -	\$ -	\$ -
Division of Wildlife Resources - Strawberry	\$ (19,853)	\$ -	\$ -	\$ -	\$ -	\$ -
Division of Wildlife Resources - Sevier River	\$ (26,349)	\$ -	\$ -	\$ -	\$ -	\$ -
Jordan Valley WCD	\$ (150,000)	\$ -	\$ -	\$ -	\$ -	\$ -
Snyderville Basin	\$ (14,896)	\$ -	\$ -	\$ -	\$ -	\$ -
Twelve Mile Canyon	\$ (727,400)	\$ -	\$ -	\$ -	\$ -	\$ -
UACD	\$ (100,000)	\$ -	\$ -	\$ -	\$ -	\$ -
UDAF	\$ (1,000,000)	\$ -	\$ -	\$ -	\$ -	\$ -
Utah Farm Bureau	\$ (100,000)	\$ -	\$ -	\$ -	\$ -	\$ -
FY 2009 - Remaining Payments	\$ (113,646)	\$ -	\$ -	\$ -	\$ -	\$ -
FY 2010 - Remaining Payments	\$ (278,808)	\$ -	\$ -	\$ -	\$ -	\$ -
FY 2011 - Remaining Payments	\$ (324,108)	\$ -	\$ -	\$ -	\$ -	\$ -
FY 2012 - Remaining Payments	\$ (855,303)	\$ -	\$ -	\$ -	\$ -	\$ -
FY 2013 Allocation	\$ -	\$ -	\$ (1,000,000)	\$ -	\$ -	\$ -
<b>Non-Point Source Projects in Planning</b>						
None at this time	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Total Obligations</b>	<b>\$ (8,281,340)</b>	<b>\$ (1,062,000)</b>	<b>\$ (1,000,000)</b>	<b>\$ -</b>	<b>\$ (5,917,000)</b>	<b>\$ -</b>
<b>HGF Unobligated Funds</b>	<b>\$ 4,164,023</b>	<b>\$ 4,358,583</b>	<b>\$ 3,950,493</b>	<b>\$ 3,964,922</b>	<b>\$ (1,225,978)</b>	<b>\$ 104,625</b>

4.2

\*Projects being presented to the WQB

Date Printed: 2/8/2012

# **Loan Funds Financial Projections**

	3rd Qtr FY 2012	4th Qtr FY 2012	1st Qtr FY 2013	2nd Qtr FY 2013	3rd Qtr FY 2013	4th Qtr FY 2013
<b>STATE REVOLVING LOAN FUND (SRF)</b>	Jan - Mar 2012	Apr - June 2012	July - Sept 2012	Oct - Dec 2012	Jan - Mar 2013	Apr - June 2013
<b>Funds Available</b>						
SRF - 1st Round (LOC) 2011 Cap Grant	\$ 278,997	\$ -	\$ -	\$ -	\$ -	\$ -
SRF - 1st Round (LOC) 2012 Cap Grant	\$ -	\$ 7,000,000	\$ -	\$ -	\$ -	\$ -
State Match	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
SRF - 2nd Round	\$ 39,366,615	\$ 17,983,777	\$ 28,942,169	\$ 30,984,649	\$ 32,495,516	\$ 34,908,618
Interest Earnings at 0.6%	\$ 60,723	\$ 27,740	\$ 44,643	\$ 47,794	\$ 50,124	\$ 53,847
Loan Repayments	\$ 104,842	\$ 3,930,653	\$ 1,997,837	\$ 1,463,073	\$ 5,587,978	\$ 3,039,588
<b>Total Funds Available</b>	<b>\$ 39,811,177</b>	<b>\$ 28,942,169</b>	<b>\$ 30,984,649</b>	<b>\$ 32,495,516</b>	<b>\$ 38,133,618</b>	<b>\$ 38,002,052</b>
<b>Project Obligations</b>						
Elwood Town - Principle Forgiveness	\$ (1,381,400)	\$ -	\$ -	\$ -	\$ -	\$ -
Granger-Hunter Improvement District	\$ (5,452,000)	\$ -	\$ -	\$ -	\$ -	\$ -
Kearns Improvement District 2011	\$ (6,555,000)	\$ -	\$ -	\$ -	\$ -	\$ -
Mona - Principle Forgiveness	\$ (700,000)	\$ -	\$ -	\$ -	\$ -	\$ -
South Valley WRF - NonPoint Source	\$ (805,000)	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Loan Authorizations</b>						
Coalville	\$ -	\$ -	\$ -	\$ -	\$ (3,225,000)	\$ -
Santaquin City	\$ (6,934,000)	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Projects in Planning</b>						
Long Valley Town	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Total Obligations</b>	<b>\$ (21,827,400)</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ (3,225,000)</b>	<b>\$ -</b>
<b>SRF Unobligated Funds</b>	<b>\$ 17,983,777</b>	<b>\$ 28,942,169</b>	<b>\$ 30,984,649</b>	<b>\$ 32,495,516</b>	<b>\$ 34,908,618</b>	<b>\$ 38,002,052</b>

## **UTAH WASTEWATER LOAN FUND (UWLF)**

<b>Funds Available</b>						
UWLF	\$ 6,167,703	\$ 1,530,177	\$ 1,934,227	\$ 2,911,052	\$ 3,740,977	\$ 5,307,982
Sales Tax Revenue	\$ 381,424	\$ -	\$ 896,875	\$ 896,875	\$ 896,875	\$ 896,875
Loan Repayments	\$ 25,000	\$ 731,000	\$ 406,900	\$ 260,000	\$ 997,080	\$ 796,393
<b>Total Funds Available</b>	<b>\$ 6,574,127</b>	<b>\$ 2,261,177</b>	<b>\$ 3,238,002</b>	<b>\$ 4,067,927</b>	<b>\$ 5,634,932</b>	<b>\$ 7,001,251</b>
<b>General Obligations</b>						
State Match Transfer	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
DWQ Administrative Expenses (TMDL, etc.)	\$ (326,950)	\$ (326,950)	\$ (326,950)	\$ (326,950)	\$ (326,950)	\$ (326,950)
<b>Project Obligations</b>						
None at this time	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Loan Authorizations</b>						
Ephraim City	\$ (2,091,000)	\$ -	\$ -	\$ -	\$ -	\$ -
Murray City	\$ (2,626,000)	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Projects in Planning</b>						
None at this time	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Total Obligations</b>	<b>\$ (5,043,950)</b>	<b>\$ (326,950)</b>	<b>\$ (326,950)</b>	<b>\$ (326,950)</b>	<b>\$ (326,950)</b>	<b>\$ (326,950)</b>
<b>UWLF Unobligated Funds</b>	<b>\$ 1,530,177</b>	<b>\$ 1,934,227</b>	<b>\$ 2,911,052</b>	<b>\$ 3,740,977</b>	<b>\$ 5,307,982</b>	<b>\$ 6,674,301</b>

4.3





Application Number: \_\_\_\_\_  
Date Received: November 7, 2011  
Date to be presented to the WQB: February 22, 2012

MC

**WATER QUALITY BOARD**  
**FEASIBILITY REPORT FOR WASTEWATER TREATMENT PROJECT**  
**INTRODUCTION**

**APPLICANT:** City of Green River  
P.O. Box 620  
460 East Main Street  
Green River, Utah 84525

**PRESIDING OFFICIAL:** Mayor Pat Brady

**TREASURER/RECORDER:** Loni Meadows, Treasurer  
Conae Black, City Recorder

**CONSULTING ENGINEER:** Craig Johansen  
Johansen & Tuttle Engineering  
P.O. Box 487  
90 South 100 East  
Castle Dale, UT 84513  
Telephone: (435) 381-2523

**BOND COUNSEL:** Richard Chamberlin  
Chamberlin Associates  
225 North 100 East  
Richfield, UT 84701  
(435) 896-4461

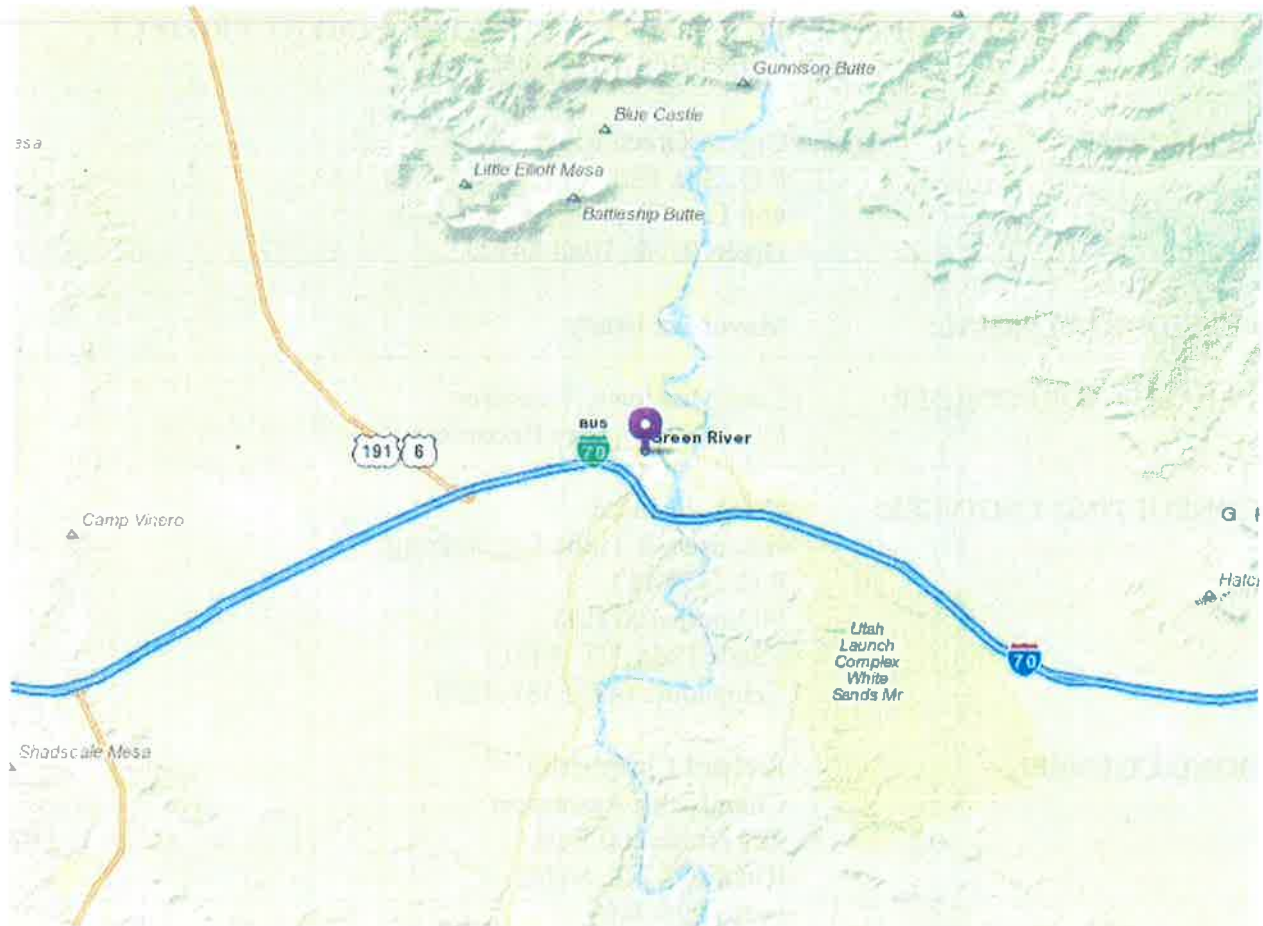
**APPLICANT'S REQUEST:**

**The City of Green River is requesting financial assistance in the amount of a \$680,000 Hardship Grant for the construction of its 2010 Wastewater Treatment Plant Improvements Project.**

**APPLICANT'S LOCATION:**

**The City of Green River is located on the border of Emery and Grand Counties, on the banks of the Green River, south of the Tavaputs Plateau, and just to the north of Interstate 70.**

### **MAP OF APPLICANT'S LOCATION**



### **BACKGROUND:**

The current population is estimated to be approximately 973 persons, comprising approximately 264 Equivalent Residential Units (ERUs). Commercial connections, primarily restaurants and hotels, account for an additional 293 ERUs. This makes for a total of 627 ERUs. Current land use within the Green River City boundaries is residential, agricultural, and commercial. GOPB projects the growth rate to average at approximately 0.55% a year, with periods of population decline.

The existing sewer system in Green River pipes the entire wastewater flow from both sides of the Green River to a four cell total containment lagoon on the south side of the City. Collection on the west side of the river is primarily through gravity pipes. Collection on the east side of the river is gravity fed to a pressure pipe which crosses the river.

The City's total containment lagoon is currently at capacity for hydraulic loading and salinity loading. In 2009, Green River applied for ARRA (Stimulus) funds to expand the City's total

containment lagoon. Because of the cost of the expansion, staff directed the City to work on getting its discharge permit modified so that the project could be scaled back to a disinfection system. The permit was modified in 2009. Since then, staff has worked with the City on various funding and study options for upgrading the system.

The results of this study have shown that it is not enough to simply provide a means for the City to discharge into the Green River. Because of the increase of salinity across the lagoon system, the City can only discharge approximately 50% of its total required discharge and still remain within the Colorado River Salinity Standard of 366 tons of TDS per year. The other 50% of the total required discharge must be disposed of by other means.

### **PROJECT NEED:**

The Green River City Lagoons are currently out of compliance with the requirement to have the capability to disinfect prior to discharge and with the Colorado River Salinity Standard discharge limit of 366 tons of TDS per year. Without funding, Green River will have difficulty coming into compliance.

### **ALTERNATIVES EVALUATED:**

The consulting engineers evaluated the following treatment alternatives for Green River:

1. No action.
2. Total Discharge into the Green River
3. Total Land Application
4. Expansion of the Total Containment Lagoons
5. Combination of some Discharge into the Green River and some Land Application

The most cost-effective feasible alternative is a combination of some winter discharge into the Green River and summer disposal through land application.

### **POSITION ON PROJECT PRIORITY LIST:**

This project is ranked 2nd of 13 projects on the Wastewater Treatment Project Priority List. Green River received almost as high a score as Coalville, the top ranked project.

**POPULATION GROWTH:**

Source Governor's Office of Planning and Budget 2008 estimates

<b>Population and Connection Projections</b>		
<b>Year</b>	<b>Residents</b>	<b>Total Sewer ERUs (based on current ratio)</b>
2020	1,152	740
2030	1,194	770
2040	1,171	750
2050	1,212	780

NOTE: GOPB has projected a period of population contraction between 2030 and 2040. It should be noted that this is not unusual for Green River. The City has just recently experienced one of these periods of contraction between when the City first came before the Board in 2009 and today.

**PUBLIC PARTICIPATION AND DEMONSTRATION OF PUBLIC SUPPORT:**

Green River needs to have public meetings regarding the project.

**IMPLEMENTATION SCHEDULE:**

Apply to WQB for Funding:	November 7, 2011
WQB Introduction	February 22, 2012
Public Meeting	March 2012
WQB Funding Authorization:	March 21, 2012
Final Public Hearing	April 2012
Facility Plan Approval:	July 2012
Issue Construction Permit	September 2012
Bid Opening	February 2013
Complete Construction	June 2013

**APPLICANT'S CURRENT USER CHARGE:**

There are currently 264 residential and 70 commercial connections to the system. Based upon water usage, the 70 commercial connections equal approximately 363 ERUs, for a total of 627 ERUs. When we began this process the current user charge rate was:

Residential: \$22.20 per month  
Commercial: \$22.20 per month + \$2.57 per 1,000 gallons for water usage greater than 9,000 gallons per month

After conducting a debt and rate study with the help of the Rural Water Association, Green River increased its base residential rate to \$35.00 per month and \$3.88 per 1,000 gallons of water usage greater than 9,000 gallons per month.

Staff is currently working with Green River City to verify the necessity of the \$35.00 per month rate structure.

### **MEDIAN ADJUSTED GROSS INCOME:**

The 2009 Median Adjusted Gross Income (MAGI) for Green River is \$23,842. The Division has used 1.4% of MAGI as a factor for determining the affordability of a loan for a community. A sewer bill of \$35.00 per month in Green River is 1.76% of their MAGI.

### **COST SHARING:**

Green River is a community with a low MAGI and is known to experience periods of negative growth with contractions in MAGI. The City's current sewer rate is 1.76% of its MAGI, well above our loan affordability criteria of 1.4%.

Green River is currently our highest priority project without a Water Quality Board funding authorization. Green River is requesting a hardship grant for the full construction cost.

<u>Funding Source</u>	<u>Cost Sharing</u>	<u>Percent of Project</u>
WQB Hardship Grant	\$ 680,000	100%

### **COST ESTIMATE:**

Planning	\$ 30,000
Construction	\$ 410,000
30% Contingency	\$ 120,000
Construction Management	\$ 80,000
Land Purchase	\$ 40,000
Total Project Cost:	\$ 680,000



# Deseret News

## Provo River restoration project detailed in Thursday event

*Published: Tuesday, Jan. 24, 2012 3:36 p.m. MST*

PROVO — Another workshop in a larger setting has been scheduled on a proposal to relocate a section of the Provo River channel to the north to help in the recovery of an endangered fish.

A crowd of people representing business and recreation interests jammed a public meeting earlier this month and opponents had to be turned away. As a result, a second workshop on the Provo River Delta Restoration Project is set for 7 p.m. Thursday at Lakeview Elementary, 2899 W. 1390 North.

Federal agencies are preparing a draft environmental impact statement that contemplates changes to the lower 1.5 miles of the Provo River where it meets Utah Lake. In this section, flows do not adequately support the habitat for the June sucker, which is under the protection of the Endangered Species Act. Although the fish once thrived in Utah lake, the fish's natural ecosystem has been altered over time and their numbers greatly reduced.

Should the river be relocated, the project team is looking for input related to what will be done with the existing channel area, such as the creation of recreational fishing ponds, wetlands or trails. Another option is to leave a small stream flow, such as 5 cubic feet per second.

Any future development of the Bonneville Unit of the Central Utah Project — which supplies water needs to the Wasatch Front — hinges in large measure on the success of the June sucker recovery program.

Project leaders say the proposed Provo River Delta Restoration efforts addresses two of four required steps toward downgrading the imperiled status of the fish.

People who value the recreational aspects of Utah Lake and the river, however, have decried the project, saying it puts conservation of the fish ahead of the interests of residents' livelihoods.

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*E-mail: amyjoi@desnews.com Twitter: amyjoi16*

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5.1

# The Salt Lake Tribune

## Research finds Great Salt Lake spiders loaded with mercury

Westminster project seeks to track movement of toxin from fly to spider to fowl.

By Brian Maffly

The Salt Lake Tribune

Published: February 5, 2012 07:01PM

Updated: February 5, 2012 08:27PM

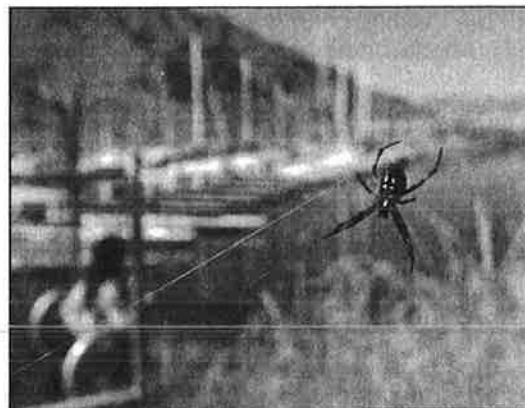
Chasing spiders and pulverizing them sounds like kid stuff. But for Westminster College undergraduates like Jim Goodman, it's scientific research that will get his name on peer-reviewed studies and open doors to graduate school.

Goodman is among a cadre of science students investigating the movement of mercury through Great Salt Lake ecosystems. His project, one of several mercury-related studies led by Westminster faculty, measures levels of the industrial toxin in orb weavers, those big-bodied spiders that proliferate near the lake's shorelines in pursuit of brine flies. Preliminary data indicate far greater mercury concentrations in spiders found at the lake's Antelope Island than those at Utah Lake.

"You can see these spiders bio-accumulating mercury like gangbusters. The next question is, what eats the spiders? No one knows," said Bonnie Baxter, director of the college's Great Salt Lake Institute. "It's this amazing place and it's so understudied."

To advance this line of research, the 4-year-old institute recently landed a \$250,000 grant from the W.M. Keck Foundation, tripling its resources.

"It's so competitive. You can't just apply. You have to be invited," Baxter said. "It's an honor to be recognized by [Keck]. They follow the top trends in science education. If we have the Keck seal of approval, others will be willing to take a chance on us."



Al Hartmann | The Salt Lake Tribune A female orb weaver, locally known as the Salt Air spider, clings to her web in the grass above the sailboats at Great Salt Lake Marina State Park. Researchers at Westminster College are measuring mercury levels in orb weavers, which prey on brine flies and other aquatic bugs, at the Great Salt and Utah lakes.

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In other research, the institute is studying brine shrimp genetics and the microbiology of the lake's hypersaline waters, which contain no fish. A biology professor, Baxter investigates the bacteria that inhabit the lake's North Arm, rendering the water a rusty red.

Why mercury matters • For years, scientists have documented elevated mercury levels in the Great Salt Lake, primarily deposited from mineral smelting. Analyses of lakebed sediments indicate deposition levels increased sharply from 1900 to 1950, according to Utah State University biologist Wayne Wurtsbaugh.

"Since then it has been decreasing and we think that it is improved smelter technology. The levels are one-quarter to one-fifth of their peak in 1950," said Wurtsbaugh, a professor of watershed sciences. But the mercury remains in the lake where microorganisms convert it to its toxic form, known as methyl mercury, which can be absorbed into organic tissues.

"People wonder what does it matter. We don't get fish out of the lake. We don't drink it," Baxter said. "If [mercury] is bio-accumulating in birds and flying somewhere else, it enters another food chain. We have to be responsible citizens because we are a part of a bigger picture."

Yet not much is understood about what happens to mercury once it gets in the lake. And few seem to notice except when it appears in game birds that can wind up on people's dinner plates. Mercury is linked to birth defects and nervous-system damage in humans. Methylmercury already has been documented in ducks, prompting the Utah Department of Health to warn against eating too much goldeneye, cinnamon teal and northern shoveler.

"We have just touched the tip of the iceberg in regards to mercury cycling in the lake. Bonnie's expansion into the terrestrial systems is a good idea," said David Naftz, a biochemist with the U.S. Geological Survey. Prior research has documented high mercury levels in the lake's two aquatic invertebrates, brine flies and brine shrimp.

The spider study is the "creepy" brainchild of Great Salt Lake Institute coordinator Jaimi Butler, who has been intrigued by the plague of orb weavers that blooms every summer near the lake.

"I see this incredible biomass out there but I couldn't find any information about it," she said. Orb weavers, named for their round webs, make up the largest spider family, known as Araneidae, with more than 3,000 species.

Because they inhabit the top of the invertebrate food chain, orb weavers would be the bugs exhibiting the greatest mercury accumulation.

Spiders dine voraciously on brine flies that hatch in the lake and swarm the shoreline by the billions. Butler's idea is to quantify the movement of mercury, taken up by fly larvae, from adult flies to the busy spiders. She recruited Goodman to gather spiders and assist Frank Blank, a new professor of biochemistry at Westminster, in processing the samples.

It's about birds • In the lab, the team smashes up the spiders with a Teflon-coated rod and dissolves the material in an acid solution. After this mixture is vaporized, the team records concentrations of elemental and methylated mercury with a device called a cold vapor atomic fluorescence spectrometer.

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"The data we've collected is significant enough that we need to do something with it," Black said. "It will be one of the few times demonstrated that you have substantial biomagnification of methylmercury in terrestrial ecosystems. Ultimately we are interested in what happens to the birds."

The lake is a major stopover and breeding ground for migratory birds, which winter here by the millions, as well as a home for many year-round residents.

"The bushes start to move, there are so many spiders out there. It's a buffet for some of these birds. You can potentially have the biomagnification [of mercury] we see in the aquatic species," Naftz said.

Westminster biology professor Christine Stracey hopes to determine which birds eat the spiders. This spring, she and her students will study western meadowlark, redwing blackbirds, cowbirds and other land-dwelling birds on Antelope Island. After catching them in nets, they will draw blood samples and attach uniquely patterned bands to their legs so they can be identified by sight. The team will compile winter survival rates, determine whether a male and female pair stay together, and track birds' movement between Antelope Island and the mainland.

In a related study, Westminster students are helping discover how mercury in the lake becomes methylated. Scientists believe microorganisms that thrive in anaerobic conditions combine elemental mercury with a hydrocarbon molecule, but no one knows which Great Salt Lake bacteria are responsible, although Baxter has some suspects in mind.

Her student Tom Stevens isolates microbial species recovered from lakebed samples, kept in canning jars in a lab fridge. This group hopes to sequence these organisms' DNA and culture them in the lab. Collaborators at Rutgers University will then observe how these isolated microbes interact with mercury.

bmaffy@sltrib.com

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#### Mercury and the Great Salt Lake

Metal smelting has left a toxic legacy of mercury contamination in the Great Salt Lake, but not much is known about how this substance moves through the ecosystem. Armed with a new grant, Westminster College is conducting research that may shed light on how mercury moves up the food chain. One project is quantifying the levels of mercury accumulating in spiders that dine on the lake's brine flies.

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## Senate approves bill reshaping environmental boards

Environment • Bill moves to House.

The Salt Lake Tribune

Published: February 6, 2012 02:31PM

Updated: February 6, 2012 11:29PM

The Utah Senate approved legislation Monday that would overhaul the state boards that oversee clean air, water and radioactive waste.

Sen. Margaret Dayton, R-Orem, said the bill has been revised to add a representative from an environmental group to each board.

The other members on the board would be industry representatives or government officials.

"Changes have been made to involve the environmental community, and they have a voice on each board," Dayton said.

SB21 would reduce the membership of all five of the environmental boards and would shift many of the boards' responsibilities to staff at the Department of Environmental Quality.

The measure was a top priority for the Utah Manufacturers Association and Utah Mining Association.

The Senate passed the bill 23-6, and it now moves to the House for consideration.

Robert Gehrke

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